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Understanding Purchasing Behavior for Green Cosmetics in Artificial Intelligence (AI) Driven Context: A Conceptual Framework

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Introduction:

The cosmetic skincare industry is expanding rapidly, driven by evolving beauty standards, technological advancements, and shifting consumer preferences (Georgievskaya et al., 2024). The cosmetic industry has become a fast-growing and dynamic industry in the international market, including skin care, hair care, deodorants, perfumes, and personal care products. The boom of the market is attributed to the changing ideals of beauty, increasing personal income, and rising digital influence, and is projected to exceed USD 750 billion by 2025, valued at approximately USD 500 billion worldwide right now. (Statista, 2023; Łopaciuk & Łoboda, 2013). Not just economically important but also profoundly ingrained in cultural identity creation, gender expression, and self-care practices, the cosmetic industry is among the most dynamic and resilient sectors of the world economy (Arnould & Thompson, 2005). Rising disposable incomes, urbanization, exposure to worldwide media, and the impact of social media influencers have driven the cosmetic sector to double-digit growth in recent years, especially in developing markets like India (Srivastava & Maurya, 2024; Vieira, 2020).

As one of the fastest-growing sectors, it is witnessing a surge in sustainable beauty. Sustainable beauty goes hand in hand with the responsible formulation and use of green, ethically sourced, and socially conscious cosmetics. The common characteristics of sustainable cosmetic products include natural or organic ingredients, cruelty-free testing, biodegradable packaging, and transparent supply chains (Limbu & Ahamed, 2023). Across the world, but particularly in India, sustainability has moved from being a niche to a general appeal. According to recent reports, 69% of Indian Consumers are willing to pay a premium price for eco-friendly products (Srivastava & Maurya, 2024). This is further amplified by younger generations like Gen Z and millennials, who are deeply inspired by green values and ethical consumption (PwC India, 2023). 69% of Indian Consumers are more willing to pay for sustainable cosmetics, showing a rare combination of demographic, economic, and cultural factors (Srivastava & Maurya, 2024), and this percentage is higher than most of the developed and emerging markets. India's young population profile, with more than half the population under the age of 30 (United Nations, 2023), fuels more intense environmental consciousness and ethical consumption behavior than the United States, Europe, and Japan's aging populations (PwC India, 2023; EY Future Consumer Index, 2023). At the cultural level, India's affluent cultural heritage of natural living, rooted in Ayurveda and traditional herbal remedies, supports consumer confidence in organic, eco-friendly products (Limbu & Ahamed, 2023). Western consumers are more likely to be cynical of green claims as a result of frequent instances of "greenwashing" (Delmas & Burbano, 2011). This shift highlights an increasing emphasis on natural ingredients, ethical manufacturing, and renewable resources, encouraging companies to adopt green innovations and more sustainable business models (Timpanaro & Cascone, 2025).

The drastic change in technology and the growing field of sustainability are influencing product development, marketing strategies, and customer purchase behaviour (Vieira, 2020). Artificial Intelligence (AI), particularly, is evolving in product development, data analysis, trend prediction, and for recommending personalized products (Xin et al., 2024). It became

easy for humans to stimulate the vast data along with social media videos, customer reviews, and AI process all these very easily(Nishant et al., 2020). AI is playing a huge role in sustainability as well by optimizing supply chain, minimizing waste, also AI-driven formulation testing helps companies to develop products more efficiently, effectively, and in a cost-cutting way. Consumers are aware of AI's ethical and privacy concerns, and this is important for brands to maintain trust, fairness, and transparency (O'Higgins & Fatorachian, 2025). AI in beauty not only personalizes but also makes the customer feel valued. There is a competitive advantage for those brands that consider the authenticity and ethical responsibility while engaging in the market.

This study aims to understand the purchasing behavior for green cosmetics in an AI-driven context and proposes a conceptual framework.

Literature review:

AI adoption is helping in many sectors, because of this, the industries are growing rapidly, enhancing creativity, efficiency, productivity, innovation, and consumer engagement. (Dwivedi et al., 2024). Gen AI helps create new content, generating new images, video, and models across every domain. it also creates text, images, and codes that are based on simple user prompts (Banh & Strobel, 2023). Nowadays, this technological evolution reshapes the market, market strategies, allows brands to personalize products according to customers' demand, and this thing increases customer engagement, adding to which also becomes important for streamlining content creation (Chatterjee et al., 2023). AI is playing a huge role in brand communication these days. brands are using generated AI content for advertising, and it clearly shows that AI has the potential to significantly enhance consumer experiences in the beauty industry, particularly in how it influences brand trust and purchase intention (Chatterjee, 2023).

Along with this AI transformation, the sustainable industry is also growing, and adding to this, the green cosmetic industry has experienced remarkable growth. Consumers are indulging in sustainable beauty products that minimize environmental impact, reduce pollution, and ensure ethical resource utilization (Limbu & Ahamed, 2023). Green cosmetics, created from natural ingredients like plants, minerals, and ethically sourced animal products, align with the broader movement toward a sustainable lifestyle. As demand for eco-friendly beauty solutions accelerates (Srivastava & Maurya, 2024), a balanced innovation of sustainability with digital transformation is needed. Despite the vast adoption of AI in marketing still its role in the sustainable cosmetic industry is unexplored. Considering AI has shown capacity to improve marketing efficacy, sharpen consumer insights, and facilitate strategic decision making, it can revolutionize the green beauty sector. Research on Gen AI in sustainable cosmetics is limited, so it is important to find out how AI-driven Innovation can improve sustainable beauty products. This study aims to bridge that gap, emphasizing the intersection of AI and sustainable cosmetics to inform future industry practices and academic discourse and underscore further research's importance in this area (Chen et al., 2023).

Based on the extant literature and the gaps, this study has the following objective:

- To understand the purchasing behavior for green cosmetics in an AI-driven context and provide a conceptual framework for the same.

Development of Conceptual Framework using the Lens of Stimulus-Organism-Response (SOR):

The way brands interact with customers has been completely changed by artificial Intelligence into marketing tactics, mostly through AI-generated content (Herman & Puntoni, 2024). AI makes it easy to create personalized advertisements, interactive experiences, product recommendations and effectively influence the decision-making process of consumers. Nowadays, AI has the power to influence consumer buying behaviour. To understand this, the Stimulus-Organism-Response (SOR) offers a comprehensive framework for analysing the Impact of AI-generated content on consumer behaviour.

Stimulus (S): AI-Generated Content:

In the SOR model, AI-generated content functions as the external stimulus. Through the analysis of extensive datasets, AI generates personalized advertising for effective communications, product recommendations, and engaging adverts suited to consumer preferences. The personalization improves customer attention and customer engagement, and helps the brand in effective promotions. Adding to this, AI recommendations systems in e-commerce platforms align with users' browsing history and preferences, which influence the purchase behaviour. Research demonstrates that AI-generated content can surpass human-created content in enhancing customer engagement and purchase behaviour (Ratta et. al.,2024)

Organism (O): Customer Knowledge and Preferences:

The organism component represents the internal processes of consumers, which include their knowledge and preferences. When it comes to AI-generated content based on existing knowledge and individual preferences, consumers process the information. Personalized AI content aligns with the customer expectations and needs, so this enhances customer trust and satisfaction. However, the effectiveness of AI-generated content is contingent upon the accuracy of AI algorithms and the quality of data utilized. Consumer preferences, Consumer engagement, and trust can decrease if there is misalignment between AI and recommendations. Studies have shown that AI's ability to analyse vast amounts of data enables the creation of tailor-made content for each user, enhancing personalization (Silver, 2024).

Response (R): Behavioral Outcomes:

The response is the behavioural outcome that comes from the interaction between the stimulus and the organism. Effective AI-generated content influences the purchase behaviour, improves customer satisfaction, and increases customer loyalty. AI-driven personalized advertisements and campaigns increase conversion rates and customer engagement. Research demonstrated that AI-generated advertising can be more efficient and effective than human-created content in boosting customer engagement and purchasing behaviour (Ratta et. al.,20240).

Development of Propositions:

AI-generated content and customer knowledge

Large consumer data sets can be analysed by AI to provide personalized content that can engage more customers by providing a better understanding of the products & services. It helps in enhancing customer knowledge (Chen et al., 2023; Dwivedi et al., 2024; Nimo et al., 2024). Accordingly, we propose that:

P1: AI-generated content leads to customer knowledge

AI-generated content and customer Preference

AI-generated content can match consumer interest, values, and influence consumer choices by providing personalized recommendations (Gu et al., 2024; Nimo et al., 2024). Personalized recommendation cultivates emotional & cognitive connections with products through providing clear information and narratives and influences customer preference (Dwivedi et al., 2024).

P2: AI-generated content leads to customer Preference.

Customer Knowledge and Preference Leading to Purchase Intention

Enhancing customer knowledge builds the confidence of customers, reduces the risk and increases the purchase intention (Limbu & Ahamed, 2023; Srivastava & Maurya,2024). Adding to this personalized AI content bridge, an alignment between customer needs and product offering to further strengthen purchase intentions (Chatterjee et al., 2023; Banh & Strobel, 2023).

P3: Customer Knowledge leads to Purchase Intention.
P4: Customer Preference leads to Purchase Intention.

Purchase Intention and Purchasing Behavior

A right intention leads to a right behavior. In the context of consumers' purchase intention, Sheppard et al. (1988) have illustrated a relation between intention and behaviour. Ajen (1991) also mentioned that purchase behaviour can accurately be estimated using an aligned intention. Accordingly, we propose that in the context of green cosmetics.
P5: Purchase Intention leads to Purchasing behavior.

Purchasing Behaviour and Customer Loyalty

AI enhances customer knowledge and provides personalized content that establishes a strong purchase behavior, customers are more inclined to make repeated purchases, and that represents the customer's loyalty (Ratta et al., 2024; Chen et al.,2023).
P6: Purchasing behavior leads to customer loyalty.

Purchase Behavior and Satisfaction

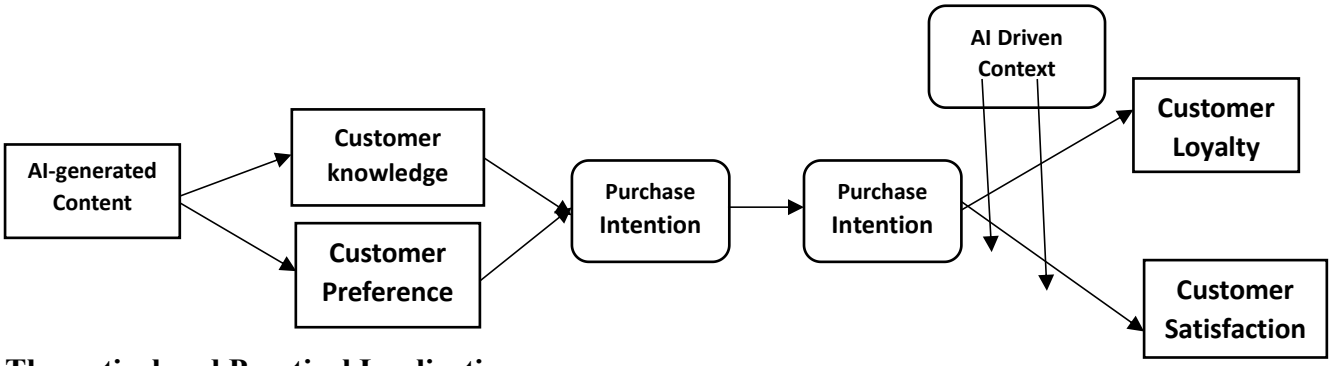
Purchase behavior, influenced by Knowledge and decision-making, repeated purchase behavior is seen if customer expectations are fulfilled. This will lead to satisfaction as customers' expectations are met as desired (Limbu & Ahamed, 2023; Srivastava & Maurya, 2024). Accordingly,
P7: Purchasing behavior leads to customer satisfaction.

Moderating role of AI-driven context

It is important to note that AI-driven context, such as better content, knowledge, and overall detailing, provides more confidence to the customers. AI-driven context also facilitates consumers in a better purchasing environment, leading to enhanced satisfaction and loyalty (Chen et al., 2023). Accordingly, we propose that:
P8 (a): AI-driven context will moderate the relationship between the purchasing behavior and customer loyalty, such that a higher AI-driven context may lead to an enhanced degree of relationship.

P8 (b): AI-driven context will moderate the relationship between the purchasing behavior and customer satisfaction, such that a higher AI-driven context may lead to an enhanced degree of relationship.

Based on the propositions discussed, the following is the conceptual framework to understand green cosmetics



Theoretical and Practical Implications:

Implying the S-O-R model to AI-driven marketing involves understanding the interplay between AI-generated content, the internal process of consumers, and behavioural outcomes. By leveraging AI to create personalized content (Stimulus), brands can effectively engage consumers by aligning with their knowledge and preferences (Organism), leading to favourable behavioural outcomes such as increased purchases, loyalty, and satisfaction (Response). The S-O-R theory has been widely used to study the relationships between external stimuli, consumers' psychological states, and responses, providing a framework for understanding consumer behaviour in AI marketing (Gu et al., 2024). Marketing strategy involves Artificial Intelligence, and it has transformed the involvement of the brand with customers, also effectively offering personalization to the customer, which helps brands to increase their customer engagement.

The results are likely to help understand customer preferences by providing personalized recommendations through AI-generated content. Gen Z and Millennials are more concerned about the environment. Nowadays, even if they are ready to pay the premium, they should also feel it is worth paying. This research will help to understand customers' sentiments and preferences. It will also help us know customer satisfaction with sustainable cosmetics. Customer satisfaction leads to customer loyalty; it will also tell us about customer loyalty for sustainable cosmetic products. Customer loyalty gives the brand more recognition and strengthens the brand equity. We can identify the growth rate of any sustainable cosmetic brand in the stock market. Also, AI-generated content can boost customer knowledge, leading to higher engagement and repeated purchase rates. AI-generated content can help develop new marketing strategies for sustainable cosmetics through communication and eco-conscious storytelling. This study will contribute to the growing field of AI in the sustainable cosmetic industry.

Reference-

1. Nimo, J. A., Ravishankar, K., & Rajagopal, N. K. (2024). AI for character creation and storytelling in marketing. In *Balancing automation and human interaction in modern marketing* (pp. 39-58). IGI Global Scientific Publishing.
2. Banh, L., & Strobel, G. (2023). Generative artificial intelligence. *Electronic Markets*, *33*(1), 63.
3. Chatterjee, J., Guha Neogi, S., & Saraswat, S. (2023, December). Consumer Perspectives for Purchase Intentions of Online Pharmacy Products Using Generative Artificial Intelligence. In *International Conference on Cognitive Computing and Cyber Physical Systems* (pp. 351-367). Singapore: Springer Nature Singapore.
4. Chen, J., Zhou, W., & Frankwick, G. L. (2023). Firm AI adoption intensity and marketing performance. *Journal of Computer Information Systems*, 1-18.
5. Dwivedi, Y. K., Pandey, N., Currie, W., & Micu, A. (2024). Leveraging ChatGPT and other generative artificial intelligence (AI)-based applications in the hospitality and tourism industry: practices, challenges and research agenda. *International Journal of Contemporary Hospitality Management*, *36*(1), 1-12
6. Georgievskaya, A., Tlyachev, T., Danko, D., Chekanov, K., & Corstjens, H. (2025). How artificial intelligence adopts human biases: the case of cosmetic skincare industry. *AI and Ethics*, *5*(1), 105-115.
7. Gu, C., Jia, S., Lai, J., Chen, R., & Chang, X. (2024). Exploring consumer acceptance of AI-generated advertisements: From the perspectives of perceived eeriness and perceived intelligence. *Journal of Theoretical and Applied Electronic Commerce Research*, *19*(3), 2218-2238.
8. Hermann, E., & Puntoni, S. (2024). Artificial intelligence and consumer behavior: From predictive to generative AI. *Journal of Business Research*, *180*, 114720.
9. Limbu, Y. B., & Ahamed, A. J. (2023). What influences green cosmetics purchase intention and behavior? A systematic review and future research agenda. *Sustainability*, *15*(15), 11881.
10. Łopaciuk, A., & Łoboda, M. (2013, June). Global beauty industry trends in the 21st century. In *Management, knowledge and learning international conference* (pp. 19-21).
11. Nishant, R., Kennedy, M., & Corbett, J. (2020). Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. *International journal of information management*, *53*, 102104.
12. O'Higgins, B., & Fatorachian, H. (2025). Consumer trust in artificial intelligence in the UK and Ireland's personal care and cosmetics sector. *Cogent Business & Management*, *12*(1), 2469765.
13. Ratta, A. A., Muneer, S., & ul Hassan, H. (2024). The Impact of AI Generated Advertising Content on Consumer Buying Behavior and Consumer Engagement. *Bulletin of Business and Economics (BBE)*, *13*(2), 1152-1157.
14. Srivastava, P., & Maurya, M. (2024). Beauty with a Conscience: Can Technology Bridge the Gap Between Eco-Awareness and Sustainable Online Choices?. *International Management Review*, *20*, 102-148.
15. Timpanaro, G., & Cascone, G. (2025). Consumer behavior and sustainability: Exploring Italy's green cosmetics market with prickly pear seed oil. *Heliyon*, *11*(3).
16. Vieira, C. J. M. (2020). *How is artificial intelligence impacting the beauty industry on making data-driven decisions* (Master's thesis, Universidade do Porto (Portugal)).

17. Xin, H., Virk, A. S., Virk, S. S., Akin-Ige, F., & Amin, S. (2024). Applications of artificial intelligence and machine learning on critical materials used in cosmetics and personal care formulation design. *Current opinion in colloid & interface science*, 101847.
18. Statista. (2023). *Global beauty & personal care market report 2023*. Retrieved from https://www.statista.com
19. Arnould, E. J., & Thompson, C. J. (2005). Consumer culture theory (CCT): Twenty years of research. *Journal of consumer research*, *31*(4), 868-882.
20. PwC India. (2023). *Future of consumer markets: Sustainability and digitalization in India*. Retrieved from https://www.pwc.in
21. United Nations. (2023). *World Population Prospects 2023*. United Nations, Department of Economic and Social Affairs, Population Division.
22. EY Future Consumer Index. (2023). *Indian Consumers and Ethical Shopping*. Ernst & Young.
23. Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California management review*, *54*(1), 64-87.
24. Georgievskaya, A., Tlyachev, T., Danko, D., Chekanov, K., & Corstjens, H. (2025). How artificial intelligence adopts human biases: the case of cosmetic skincare industry. *AI and Ethics*, *5*(1), 105-115.
25. Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of consumer research*, 325-343.
26. Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.
27. Silver, S. (2024). Shaping the future of consumption: The impact of AI-generated content on consumer behavior. Retrieved from https://www.linkedin.com/pulse/shaping-future-consumption-impact-ai-generated-content-seth-silver-yp48c/